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Pelagic Fisheries Research Program

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MHLC4 Sets Convention Area, Calls for Scientific Support

The fourth meeting of the Multilateral High Level Consultation on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (MHLC4) took place in Honolulu Feb. 10–20, 1999. The purpose of the MHLC process is to create an "arrangement" for international management of fisheries for "highly migratory species." The arrangement created by this process will be an international commission with the responsibility to regulate the largest tuna fishery in the world, encompassing most of the surface of the Pacific Ocean. This new agreement, when completed, will be the first to be negotiated since the conclusion of the 1995 United Nations Implementing Agreement (UNIA) on highly migratory fish stocks.

The three preceding meetings—which took place in Honiara, Majuro and Tokyo—largely dealt with the general aims and goals of the arrangement. In some respects, these first meetings covered uniformly accepted "motherhood" issues. In contrast, the delegates to MHLC4 began to deal with some of the more difficult problems. John Sibert presents some of the issues that occupied this most recent round of negotiations. The basis for these comments is the working document prepared by the chair of the consultation, Ambassador Satya N. Nandan of Fiji, entitled "Draft convention on the conservation and management of highly migratory fish stocks in the western and central Pacific Ocean."

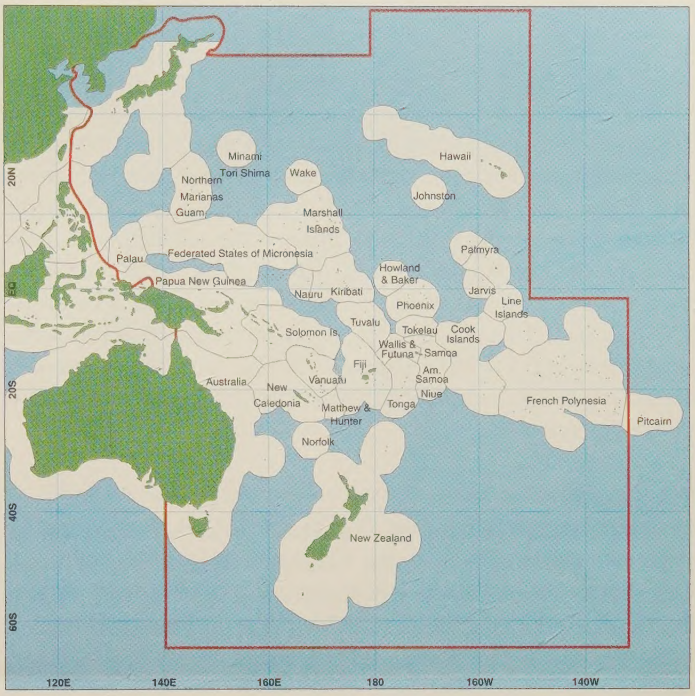

Figure 1. Map of the Pacific Ocean showing approximate boundaries of the convention area outlined in red. None of the political boundaries shown in the map should be considered "official." The coordinates of the convention area were taken from the text of the draft agreement.

Convention Area

The UNIA and the Majuro Declaration stress management of highly migratory stocks throughout the range of their distribution. Although biologists are comfortable with this concept, it is perhaps too vague for diplomats and politicians. Boundaries of the convention area thus occupied much of the discussion in both plenary sessions and smaller working groups. A provisional convention area was developed as shown in Figure 1. The area avoids overlap between the western and the eastern Pacific where some purse-seine fisheries for yellowfin tuna are regulated under a quota established by the Inter-American Tropical Tuna Commission. The boundaries of the region also enable the MHLC to dodge the issue of membership by North Pacific countries that are not currently stakeholders in the central and western Pacific tuna fishery.

Unfortunately, the critical archipelagic waters of Indonesia and the Philippines are excluded from the convention area. Both countries are home to extensive small-scale tuna fisheries in their archipelagic waters. The archipelagic waters of Indonesia and the Philippines are a possibly important spawning and nursery area, and there is growing concern about large harvests of juvenile tunas in this area. Indonesia and the Philippines agree to "cooperate in the collection and exchange of scientific data" and are committed

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to "take into account any measures adopted by the Commission for the same stocks in the Convention Area" when establishing management measures within their archipelagic waters. Such assurance of cooperation is not a strong means to ensure consistency of harvest controls.

From a biological point of view, the convention area certainly does not encompass the full range of the stocks. Exclusion of archipelagic waters is potentially damaging to the ability of the new commission to conserve stocks, particularly if similar exclusions are claimed by other countries with large tuna harvests in their archipelagic waters. There are no barriers between the eastern Pacific and the western Pacific, and tunas and billfish are known to move between these areas, although exchange rates appear to be low for some species. Although less than ideal from an ecological point of view, the area is probably satisfactory for coping with fisheries for skipjack, yellowfin tuna, and south Pacific albacore in the near term, but many biologists might question its suitability in the longer term, particularly for bigeye and bluefin tunas and swordfish.

Membership

Membership criteria also occupied a lot of attention at MHLC4. Currently, Australia, Canada, Chinese Taipei, Cook Islands, Federated States of Micronesia, Fiji, France, French Polynesia, Indonesia, Japan, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, People's Republic of China, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, United States of America, Vanuatu, and Wallis and Futuna are full participants in the MHLC process. Members of the commission are referred to as "contracting parties" rather than countries, states, economies or entities. This useful circumlocution allows the MHLC to include all current stakeholders in the fishery regardless of political status.

Funding

MHLC4 addressed the question of funding the commission, but more work is apparently required. The intention is to assess each member an equal fixed amount plus a variable amount that will depend on the catch in the convention area and on the per capita income of each member. The details of this funding scheme have yet to be negotiated.

Scientific Support

The draft convention makes numerous references to "the best scientific evidence available." The MHLC clearly acknowledges that scientific support for a management arrangement that covers the majority of the Pacific Ocean is critical and provides several mechanisms to obtain such support.

The MHLC4 draft convention calls for the creation of a "Scientific Committee" and "other subsidiary bodies as it deems necessary." The details of the committee and subsidiary bodies are not articulated, but their prototypes already exist in the Standing Committee on Tuna and Billfish. The SCTB is a group of specialists in tuna fisheries from most of the "contracting parties" to the MHLC that has met annually since 1988 to exchange fisheries statistics, review scientific research and identify research issues. The SCTB currently comprises a statistics working group and research groups on skipjack, yellowfin, bigeye, albacore, and billfish and by-catch. The draft convention specifically mentions the possibility of creating additional research groups to consider albacore and bluefin tunas north of the Tropic of Cancer. The MHLC has treated the SCTB as its de facto scientific committee and primary source of scientific advice. Whether this de facto arrangement will continue remains to be determined.

The MHLC4 draft convention also calls for the creation of a commission with its own secretariat. The staff of scientific, technical and other personnel will be appointed by an executive director, as may be required to get the job done. The location and size of the staff have not been determined.

"Scientific experts" are mentioned extensively in the draft convention. The commission is explicitly empowered to enter into administrative and financial arrangements to obtain scientific advice. The experts obtained under these arrangements appear to bear the burden of the routine scientific support tasks. It is not clear who these experts might be. They may be affiliated with existing research organizations or they might be private contractors.

The cost of scientific support has not been addressed directly. The intent appears to be to make use of the existing scientific research assets as much as possible. The Oceanic Fisheries Program of the Secretariat of the Pacific Community and the Inter-American Tropical Tuna Commission are both explicitly mentioned as organizations that would "be invited to participate in the work of the Scientific Committee." Other organizations and individual would also be invited to cooperate. Whether the budgets of these collaborating organizations can support the added workload is unclear.

Future Talks

Substantial progress was made during MHLC4 on many difficult issues, but the treaty is far from complete. Further negotiations are planned for later in 1999, but the place and dates have not been fixed.

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How to Get the Best Science into Regional Fishery Management

What type of science arrangement would provide the best science for the Pacific while balancing national interests against the region's wider interests? Peter Ward analyzes regional science arrangements that exist in the Pacific and other parts of the world. His study is based on published and unpublished literature, telephone interviews with people associated with six different organizations and a report recently published by the Bureau of Resource Sciences, now the Bureau of Rural Sciences (Ward P, Tsirbas N, Kearney B. 1998. Getting science into regional fishery management, a global view. Canberra: Bureau of Rural Sciences). The views expressed in the article are not necessarily endorsed by BRS or the Australian government.

With an annual harvest of 1.4 million metric tons and a value of US$1.7 billion per year, the tuna fishery of the western and central Pacific is the largest tuna fishery in the world. Managing this resource for sustainability is important to both the Pacific island nations that have jurisdiction over much of the fishing grounds and for the distant-water fishing nations that harvest most of the catch. Without a formal arrangement for fishery management, disputes over resource use will detract from the benefits that the nations can derive from the tuna resource.

A regional approach is appropriate for cost-effective assessment and management of a resource that is highly mobile, widely distributed and multispecies. The western and central Pacific arrangement will require scientific advice that is objective and independent of external influences, such as national politics, industry interests and conservationist lobbying. It will also require a strong role for participants in identifying advice needs and setting the science organization's work plan.

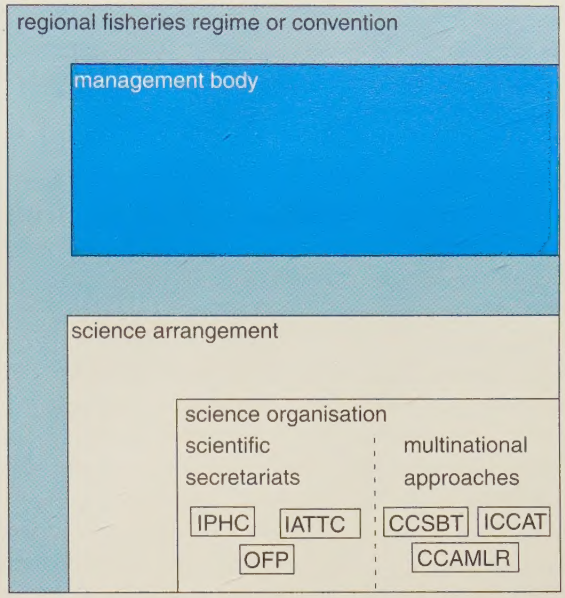
Two approaches to fishery science are common in bodies managing regional fisheries. In the science secretariat approach, a regional scientific body has its own staff and is responsible for key aspects of regional fishery science. In the multinational approach, national scientists (usually with the aid of an administrative secretariat) regularly meet to pursue regional fishery science.

While both approaches are capable of providing high quality scientific advice, each has its own weaknesses. With appropriate measures to adjust for those shortcomings, the western and central Pacific nations could successfully adopt either approach and could even build upon an existing organization with proven success.

Multinational Approach

The multinational approach relies on national research efforts, which usually focus on national concerns. This approach is responsive to emerging issues that are important to members. However, activities by members can be duplicated, and so the overall cost-effectiveness of research is reduced.

In addition, the quality of data can vary greatly between members. Overall quality of the science is maintained, however,



A regional fishery convention or regime is composed of a management body and a science arrangement. Specific science arrangements, referred to as organizations, include the science secretariat and multinational approach. Each category has its pluses and minuses, which opens debate as to the best type of arrangement for the western and central Pacific tuna fishery. IPHC=International Pacific Halibut Commission; IATTC=Inter-American Tropical Tuna Commission; OFP=Oceanic Fisheries Program; CCSBT=Commission for the Conservation of Southern Bluefin Tuna; CCAMLR=Commission for the Conservation of Antarctic Marine Living Resources; ICCAT=International Commission for the Conservation of Atlantic Tunas

because the approach relies on debate within the wide membership, which includes many scientists with expertise in a wide range of fields.

The multinational approach provides a democratic forum for science. Using consensus to reach decisions, it ensures the concerns of all participants are heard. This process helps promote acceptance of recommendations based on scientific advice. However, as national agencies often undertake stock assessments independently, with the multinational science committee having a cursory role in reviewing results, it may result in the prevalence of decisions based on the lowest common denominator and often on inferior data.

Participation at the multinational meetings is usually self-funded. Small nations with limited financial and science capacities may have difficulties participating in all the science meetings in which they have an interest. Nations that have large, well-prepared delegations tend to dominate discussions. Many scientists attend meetings of multinational arrangements as national representatives. They are also responsible for representing the interests of

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industry and non-government organizations. Differences in regional and national interests may create competing priorities. Consequently, national interests have a great potential to interfere with science in a multinational approach.

Science Secretariat

A science secretariat is mandated to take a regional approach. Its research projects target broad-scale stock assessment and management needs and can often establish data sets of uniform quality. Its mandate, however, is often limited to biological aspects of the fisheries.

A science secretariat is able to attract funding from external sources while remaining relatively insulated from external influences. It is often able to guarantee confidentiality of data and thereby access detailed information that is not usually exchanged between national agencies. As a result, it can develop a monopoly over knowledge of fishery developments and associated science.

A science secretariat may be resistant to changing long-term work plans to accommodate emerging issues identified by individual members, who have a peripheral role in developing science priorities. Members and science secretariat staff often find that existing formal mechanisms for members to provide feedback on the performance of the secretariat do not operate satisfactorily. A science secretariat also tends to resist external review.

Recommendations

Some of the problems posed by current multinational and science secretariat approaches have possible, though not necessarily inexpensive, solutions. For example, the multinational approach could be improved by incorporating funding to support participants and training programs to develop national science capacities. Likewise, the science secretariat approach could be improved by making funding broad based and supported by sources other than member nations.

However, the quality of science is dependent on not only the structure of the science arrangement, but also the ways the responsibilities are specified and applied and the personnel who are recruited

As an existing science organization, the Secretariat of the Pacific Community's Oceanic Fisheries Program is an attractive science arrangement for the western and central Pacific tuna fishery regime. OFP successfully combines a science secretariat approach with many features of a multinational approach (e.g., accommodating national input into assessments and priority setting). It has a long history of providing high quality scientific advice on the status of tuna in the western Pacific. However, political considerations, such as the Secretariat's membership and the need for Pacific island nations to retain their own technical support, must be overcome if the OFP is to extend its current responsibilities to serve a broader regional fishery regime.

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Science in the Pacific Tuna Fishery: Common Concerns

In examining the current approaches to regional tuna science in the western and central Pacific, Peter Ward and his colleagues found several areas of general concern.

- Many Pacific islands have small populations, limited access to education facilities and a paramount need to develop their science capacities so they can more fully participate in the research and management of their fishery resources. Science secretariats are ideally positioned to provide training for member scientists but have often failed because training is given low priority and inadequate support.
- The annual science budgets of the three science secretariats reviewed were up to 1.8 percent of the annual landed value of their fishery (US$150 million–US$800 million). However, there are many pitfalls in applying a set rate of landed value to science funding. As examples, a multispecies fishery is comparatively more expensive to research than a single species fishery; some species are more vulnerable to overfishing, and a collapsing fishery may require a greater science effort than a moderately exploited fishery. Furthermore, the western and central Pacific tuna fishery is much larger than the other fisheries examined here and economies of scale can be expected.
- Neither the science secretariat or multinational approach has appropriately incorporated inputs from the fishing industry and non-government organizations, which can make useful technical contributions to the western and central Pacific science arrangement. Both approaches have also failed to fully integrate economic and social considerations in their assessments and advice.
- External review by national scientists or independent experts is required to confirm that the regime's science is of the highest standard. Science secretariat and multinational organizations both claim that exposure of the science process constitutes peer review. But in practice, none of the six organizations examined have been particularly successful in establishing formal processes for the external review of their science.
- Science secretariat and the multinational approaches both communicate advice through a summary report presented to the management body by a representative. This procedure should ensure that a single, unambiguous message is delivered to the management body. However, most of the scientists interviewed believed that the degree of communication between science advisers and fishery managers was unsatisfactory.

Archival Tags—The Good, the Bad and the Desired

Although there remains much scope for the development of better archival tag software, the current generation of archival tags—currently worth about $1,200 each—is as good a tag as likely to be available for some time, the members of the Pacific Bigeye Tuna Research Coordination Workshop concluded. Organized by the Pelagic Fisheries Research Program, the workshop was held Nov. 9–10, 1998, in Honolulu. During the event, participants shared their Pacific tagging experiences and offered the following comments on archival tags.

Richard Brill of the National Marine Fisheries Service (NMFS) and Mike Musyl presented vertical and horizontal movement data derived from the recapture of a 131 cm bigeye that had been tagged with a Northwest Marine Technology (NMT) device. The fish was tagged and recovered off Kona, Hawai'i, in 1998 after four months at liberty. An important shortcoming of the device was apparent as the fish normally dove to depths in excess of the ability of the light sensor to detect day length information. Fortunately, the fish exhibited extremely regular diving behavior at apparent sunrise and sunset periods that were used to calculate nominal day and night periods.

John Gunn, CSIRO-Hobart, presented data from southern bluefin tuna tagged in South Australia with Wildlife Computer archival tags. Estimation of longitude from the data was generally feasible, but accurate latitude estimation was dependent on time being spent at the surface, he noted. Temperature/depth profiles could be useful in this regard, he added.

Despite these shortcomings and the larger sample sizes possible with conventional tags, archival tags are desirable for many reasons. They can deliver large quantities of repetitive data,

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Upcoming Events

May 24–27
50th Tuna Conference
Lake Arrowhead, California
tel. (619) 546-7022 or (619) 546-7199
fax (619) 546-7133
e-mail gwatters@iattc.ucsd.edu,
jmarrow@iattc.ucsd.edu

June 7–11
SPC Standing Committee Meeting on Tuna and Billfish
Tahiti
tel. (687) 26-3818
fax (687) 26-2000
e-mail adl@spc.org.nc

October 15–19
Tuna Fishing and Fish Aggregating Devices
Martinique, French Antilles
tel. (596) 65-1154
fax (596) 65-1156
e-mail Marc.Taquet@ifremer.fr

October 27–30
Spatial Processes and Management of Fish Populations
Anchorage, Alaska
tel. (907) 474-6701
fax (907) 474-6285
e-mail FNBRB@uaf.edu

Archival Tags (continued from page 5)

making a single archival tag worth many conventional tags. Archival tags are obviously useful for behavioral data but are also valuable for measuring annual movement cycles and obtaining movement data from areas where there is no fishing effort. Archival tags are also useful to discern stock relationships that could have implications for regional management. Participants agreed that fishery research would ideally include both conventional and archival tagging projects, possibly within the same area and time frame.

Given the technical problems experienced with some archival tags (light and depth sensors), the workshop participants agreed that the group should develop specific criteria for bigeye-specific archival tags to present to the tag manufacturing companies and maintain a standardized approach for coordinated Pacific-wide bigeye research. Careful testing and calibration of tags would be an integral part of this coordinated effort.

Workshop participants felt that the standardized purchase and use of the same tag type, even to the extent of a central acquisition point, to be of great merit.

Members were divided on the preferred method of tag attachment. Brill recommended that, on fish greater than approximately 85 cm fork length, NMT tags be inserted in the dorsal musculature rather than sewn into the body cavity while, on fish as small as 65 cm, Wildlife Computer tags could be placed in the body cavity. Gunn opted for internal placement of Wildlife Computer tags, recommending cutting open the body wall and slightly tearing the peritoneum to allow the tag to be pushed inside the cavity. This internal placement had the advantage of allowing visceral temperature to be recorded, Gunn said. With both methods, minimizing stress on the fish is of critical importance.

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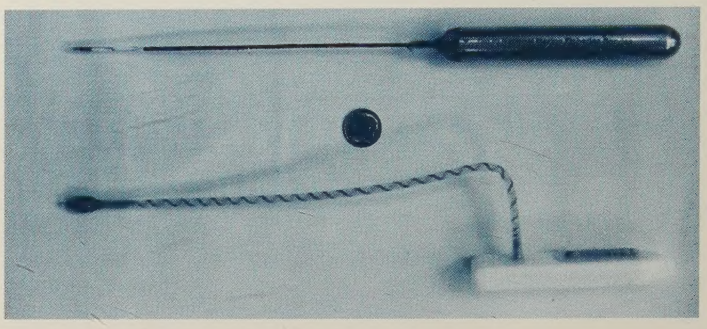

Despite their shortcomings, archival tags (like the Northwest Marine Technology tag pictured above the coin and the Wildlife Computers tag below it) are desirable for many reasons.

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